

Modern Interpretation of Traditional Chinese Medicine Theory

Mikhail Teppone, MD,¹ and Romen Avakyan, PhD²

ABSTRACT

The terms and theories applied in Traditional Chinese Medicine (TCM) are interpreted in this article. *Qi* can be imagined as a universal measuring and comparison unit as well as a common managing parameter in a cybernetic sense; the terms *Heat* and *Cold* are suggested as an evaluation of heat production by the patient's body or his/her organs; the theory of stress designed by Selye is compared with Zhang's theory of 6 Channels. Finally, theories used in TCM are explained to be a mathematical model, showing the general physiological and pathological processes taking place in the human body.

Key Words: TCM Theory, Qi, Tao, Yin, Yang, Five Elements, Heat, Cold, Excess, Deficiency

INTRODUCTION

DO WE NEED TO PRESERVE the original Traditional Chinese Medicine (TCM) lingo or it is possible to match the TCM terms with their equivalents in modern medicine? Can a Western physician apply such terms as Yin and Yang, Five Elements, Excess or Deficiency, and Heat or Cold in his/her daily acupuncture practice?

In this article, we attempt to answer these questions and suggest reasonable explanations of the main terms and theories applied in TCM.

ACUPOINTS, CHANNELS, AND ORGANS

The main aspects of Acupoints, Channels, and Organs have already been described.^{1,2} We repeat our idea: it is assumed that through the theory of *Channels and Collaterals* that ancient Chinese physicians described physiology and pathology of intercellular spaces as well as body cavities, and by the theory of *Zang and Fu Organs*, they described cellular physiology and pathology.

(The) system of Acupoints is a part of the Channels, i.e., it is a part of intercellular spaces. Due to morphologic and

functional complexity of acupoint areas, it provides interaction between internal body environments with its external surrounding.

QI OR ENERGY

It is difficult to translate the term *Qi* and many different translations have been proposed, none of which approximates the exact essence of *Qi*.³ It can assume different manifestations and can mean different things in various situations. Usually, it is impossible to understand the meaning exactly without the text where the word, *Qi*, is applied. Sometimes, *Qi* is translated as "air," "energy," and "living force," or functional activity is described by means of *Qi*. At the same time, it is both material and nonmaterial. It can be associated with either "energy" or "form." Hence, it has a quality described by quantum physics as *corpuscular-wave dualism*.

A name of the *Qi* depends on context and classification (or system of coordinates) that is applied; for example *Yang Qi* and *Yin Qi*, *Wei Qi* and *Nei Qi*, *Qi of Lung*, *Qi of Liver*, *Qi of Upper Jiao*, etc. Accordingly, one and the same "*Qi*" can be named by a different manner according to its exact function.

¹Medical Acupuncture, AcuTech International, Inc, Toronto, ON, Canada.

²Radio-Physicist, Coloyaro-2000, Moscow, Russia.

We assume that ancient Chinese physicians understood the complexity of the human being and limitations of our 3-dimensional space. Ignoring theories about the multi-dimensional world, we can only analyze dependence of 1 parameter on 1 or 2, simultaneously $\{Y=f(x, z)\}$. Therefore, the ancients proposed an idea, similar to the cybernetic model designed by Beer, by which any complex system can be managed by a sole controlling parameter.⁴

In addition, Chinese doctors suggested relative and universal measuring units such as “percentages” and gave it a name, “Qi.” By means of Qi, one may compare *non-comparable* signs and phenomenon—for example, height, weight, color, and time, condition of health or disease, and various therapeutic methods. This type of comparison is not made in quantitative but rather in qualitative characteristics, such as “more,” “much more,” “less,” “much less,” or “equal.”

The term *Qi* is also applied to claim the unity and similarity of existence, to point out their interactions, and to unite them into 1 universe.

EXCESS AND DEFICIENCY, HEAT AND COLD

In the 18th century, a famous Scottish doctor, William Cullen, and his follower, John Brown, considered that there were only 2 types of diseases: *asthenic* and *sthenic* diseases. In the case of *asthenic* diseases, they recommended invigorative treatments such as warmth, fomentation, meat, spicy food, and wine. For *sthenic* disease, they recommended sedative treatments such as bloodletting, emetic and depletive medicines, clysters, remedies that contained opium or atropine, etc.^{5,6}

At the close of the 19th century, Russian physiologist Vedensky studied the physiology of the damaged nerve. He found that the process of inhibition had several phases: 1 of the phases was named as a “paradoxical phase of parabiosis.” In this phase, reaction of the damaged nerve was satisfactory in case of exposure to the weak electrical stimulus, but application of the strong electrical stimulus induced aggravated inhibition.⁷

Later, another Russian physiologist, Ukhtomsky, found that both the process of excitation and the process of inhibition had similar natures. He also showed an unusual excited condition of the brain that was named as a “dominanta.” This stable excitation focus was reinforced by any additional stimulus from the entire body and only a very strong stimulus could destroy or sedate “dominanta.”⁸

Specifically, the living system can have conditions of high or low activity. In the first case, it requires reduction of activity by strong stimulus, but the latter case requires reinforcing by weak stimulus. Application of improper intensity of stimulus can result in aggravation of the initial problem.

In TCM, pathologies are differentiated on the base of the Qi condition: therefore, disease can have relative Excess of Qi or relative Deficiency of Qi.

If a patient has a cough, it may mean that there is a disease of the lung. If the cough is aggravated by inhalation, then it means that there is an *Excess* condition of the lung. If cough is aggravated by exhalation, then it means that there is a *Deficiency* condition of the lung. In case of Excess, one should sedate points of the Lung channel and in case of Deficiency, one should reinforce points of the same channel. Neither Western diagnosis nor results of laboratory analyses and x-ray examination are important for the treatment by TCM methods because of the fact that they do not point on the condition of *Excess* or *Deficiency*.

Hence, Qi is parameter X in the equation $\{Y=f(x, z)\}$, where Y is the condition of the patient’s body or his/her organ and Z is as a particular case of Excess and Deficiency. If any Heat adding to the patient’s body results in aggravation of symptoms, then it means that there is a *Heat* condition; if any Cold adding to the patient’s body results in aggravation of symptoms, then it means that there is a *Cold* condition. We can assume that “Heat” and “Cold” describe intensity of heat production; i.e., Z describes predominance of exothermic or endothermic chemical reactions in the patient’s body. Therefore, if exothermic reactions prevail, then disease has Heat symptoms and requires “cleaning the Heat.” On the contrary, if endothermic chemical reactions predominate, then disease has Cold symptoms and requires warming therapy.

Consequently, in TCM diagnosis, it is necessary to determine Excess or Deficiency for disease of channels and collaterals $\{Y=f(x)\}$, and both *Excess* or *Deficiency* and *Heat* or *Cold* for disease of organs $\{Y=f(x, z)\}$.

THE TAO, YIN AND YANG, FIVE ELEMENTS

*Those who know (the TAO) do not speak of it; those who speak of it do not know it.*⁹

Nevertheless, whoever wants to imagine a mathematic model of the TAO should try to divide “1” by “0.”

We also recognize the following ideas in the TAO:

- One truth: there is only 1 true way and there is no choice; illusion of choice means lack of understanding or knowledge, as well as breach of the law.
- Pre-existence: everything was in existence from the very beginning; there was no evolution, but there is realization of the preexisted pattern.
- Holistic approach: TAO creates interconnected parts Yin and Yang; “separation of Yin from Yang results in death,” so, if we study a part of the whole and omit at least 1 connection with other parts of the whole, it is not a part of the initial *Whole* any longer, but it is already a new smaller *Whole*.

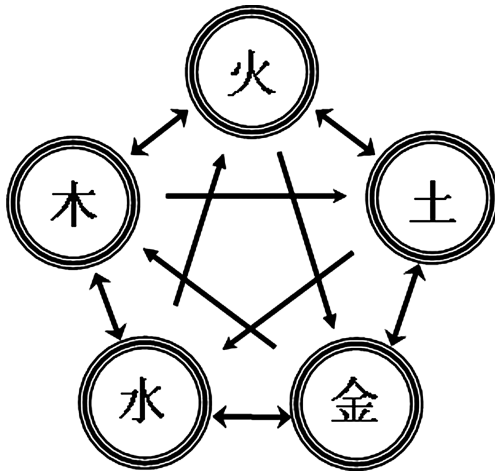


FIG. 1. There is a final scheme of interaction between elements of the system: this scheme looks like an algebraic equation where figures are replaced by symbols.

Yin and *Yang* is a binary system of calculation and comparison. It can describe all variety of the world as well as simplifying the extremely complex problem down to the choice of “yes” or “no”; for example, a complex numerical series, 1000110001001000010010000101, can be simplified to inequality $\{0 > 1\}$.

Interactions between *Yin* and *Yang* are not antagonistic completely as $[-1]$ and $[+1]$, but there are phase transformations that are realized in the law of *Five Elements*. This law has the following initial conditions:

- (1) $\uparrow \alpha \Rightarrow \uparrow \beta$; $\uparrow \beta \Rightarrow \uparrow \lambda$; $\uparrow \lambda \Rightarrow \uparrow \gamma$; $\uparrow \gamma \Rightarrow \uparrow \mu$; $\uparrow \mu \Rightarrow \uparrow \alpha$,
- (2) $\downarrow \beta \Rightarrow \downarrow \alpha$; $\downarrow \alpha \Rightarrow \downarrow \mu$; $\downarrow \mu \Rightarrow \downarrow \gamma$; $\downarrow \gamma \Rightarrow \downarrow \lambda$; $\downarrow \lambda \Rightarrow \downarrow \beta$,
- (3) $\uparrow \alpha \Rightarrow \downarrow \lambda$; $\uparrow \beta \Rightarrow \downarrow \gamma$; $\uparrow \lambda \Rightarrow \downarrow \mu$; $\uparrow \gamma \Rightarrow \downarrow \alpha$; $\uparrow \mu \Rightarrow \downarrow \beta$,
- (4) $\downarrow \alpha \Rightarrow \uparrow \lambda$; $\downarrow \beta \Rightarrow \uparrow \gamma$; $\downarrow \lambda \Rightarrow \uparrow \mu$; $\downarrow \gamma \Rightarrow \uparrow \alpha$; $\downarrow \mu \Rightarrow \uparrow \beta$,

where ‘ α ’ was named 木 (wood), ‘ β ’ ~ 火 (fire), ‘ λ ’ ~ 土 (earth), ‘ γ ’ ~ 金 (metal), ‘ μ ’ ~ 水 (water); and symbol $[\uparrow]$ means *reinforcing*, $[\downarrow]$ means *sedating*, and $[\Rightarrow]$ means *results of interaction*.

From the mathematic model point of view, “5” is the least number of Elements in the dynamic system with the both direct and indirect either reinforcing or sedating interactions. This system can have 6, 7, or more Elements, but not less than 5 (Figure 1).

ETIOLOGY OF DISEASE

In both modern Western medicine and TCM, etiologic factors can be divided into 3 main groups: genetic disorders, emotional stress, and environmental or external factors.

Nevertheless, description of external factors in TCM raises many questions such as, “What does Wind mean?”

We assume, based on their huge practical experience, that doctors in ancient China analyzed all symptoms and systemized them into 5 types of reaction. One of the possible acceptors of the helio-cosmic factor changes can be *water molecules* inside and outside of the human body.¹⁰

The ancients also drew parallels between changes of the weather and symptoms of patients, and developed special terms to describe those interactions: *Heat*, *Cold*, *Wind*, *Dampness* and *Dryness* (Figure 2).

By means of the terms “Heat” and “Cold,” they described heat production of the patient’s body; by means of the terms “Dampness” and “Dryness,” they described water metabolism and the capacity of the body to accumulate water molecules. By means of the term “Wind,” they estimated the speed of changes of various parameters occurring in the patient’s body.

PATHOGENESIS OF ACUTE DISEASES

About 1,800 years ago, Chinese physician Zhang Zhongjing described the main symptoms and phases of acute disease evolution in his “Treatise on Febrile Diseases Caused by Cold” (*Shanghan Lun*) (Figure 3), and also wrote his prescription for therapy.^{11,12} In the beginning of the last century, Selye again paid attention to the general symptoms of acute diseases and published results of his study.¹³

According to both theories, any acute disease starts from activation of body resistance. Zhongjing described this

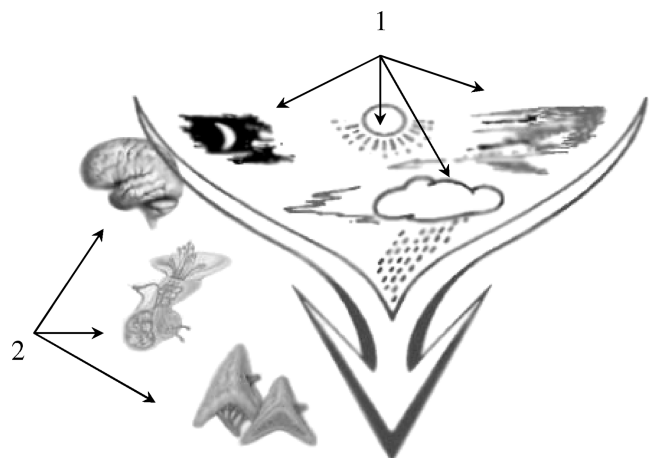


FIG. 2. External factors that act on the human body from outside: (1) Sun, moon, stars, and other space bodies act on the atmosphere resulting in changes of the weather; (2) Organs and systems that take part as defense to protect the body from external factors.

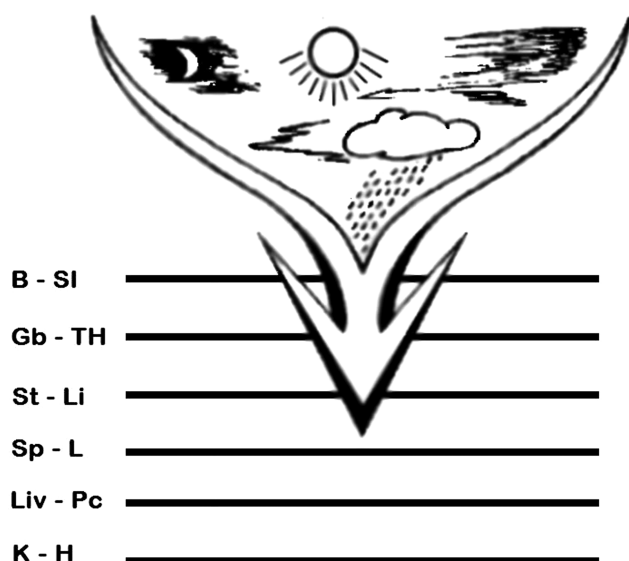


FIG. 3. The theory of 6 Channels, designed by Dr Zhang. In the main Classic books on acupuncture *Shao Yin* (K-H) is on the 5th level and *Jue Yin* (Liv-Pc) is on the 6th level; in the books of .Nghi *Shao Yin* (K-H) is on the 6th level and *Jue Yin* (Liv-Pc) is on the 5th level.¹⁴

phase by means of disorders of Yang Channels. Selye and other modern scientists believe that acute phase is characterized by activation of the sympathetic autonomic nervous system, increase of corticosteroids production, and intensive consumption of carbohydrates.¹⁴

At the late stage, symptoms of exhaustion can be observed. Zhang described this phase by means of disorders of Yin pairs of Channels. In modern studies, this exhaustion phase of acute disease is characterized by decreasing parasympathetic autonomic nervous system activity, as well as insulin production, and transformation of metabolism from carbohydrates to lipids.¹⁴

Thus, both Drs Zhang and Selye described the same idea of acute diseases evolution, but they presented their theories in different verbiage.

In 1988-1990, we applied solely extremely high-frequency (EHF) puncture¹⁵ to treat 44 patients with exacerbation of peptic (duodenal) ulcer. Clinical manifestations in this group of patients were differentiated on the basis of Zhang theory of 6 Channels. In our study, 3 patients had symptoms of the Shao Yang stage, 13 patients had Yang Ming stage, 3 patients had Tai Yin stage, 20 patients had Jue Yin stage, and 5 patients had symptoms of the Shao Yin stage.

After 2 weeks of treatment, healing of ulcers was achieved in 29 cases (65.9% \pm 7.2%). If patients had Yang Ming syndrome, healing of the ulcer was achieved in 12 cases (92.3% \pm 7.7%). If patients had Jue Yin syndrome, including those who had various complications of peptic ulcer in anamnesis, healing of the ulcer was achieved in 12 cases (60.0% \pm 11.3 %).¹⁶

MECHANISMS THAT UNDERLIE THE BASE OF THERAPEUTIC EFFECTS OF ACUPUNCTURE

Modern studies have formed a base of scientific understanding of the biological and therapeutic effects of acupuncture, moxibustion, electroacupuncture, and other modalities.¹⁷⁻¹⁹

Usually, anti-inflammatory, anti-swelling, anti-allergic, pain relief, and other effects are claimed. It is believed by many that by using acupuncture, one might stimulate or modulate components of the immune and endocrine system and normalize microcirculation and metabolism. Recently, attention has been paid to neuropeptides, including endorphins and enkephalin.

Analysis of various modern studies concludes that in any case, only the normalizing effects accompany any successful treatment. If the patient initially has increased parameters, then we wait for their decreasing; if the patient initially has decreased parameters, we hope to achieve their increasing. Usually, treatment does not change parameters that were at a relative norm.

The more the initial change, the more improvement after treatment may be obtained. If a patient has a small initial change of some parameters, then improvement after treatment may not be statistically proved.

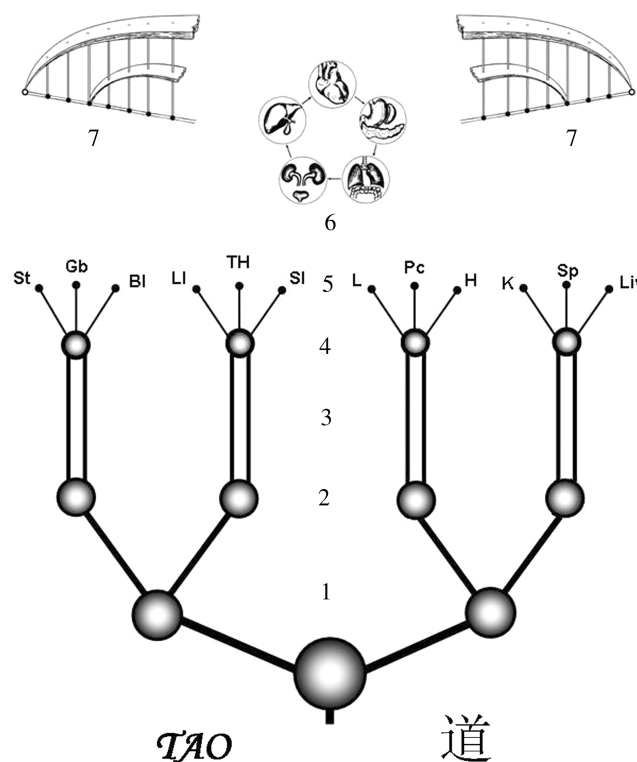


FIG. 4. There are main blocks and levels of the human body: (1) Yin and Yang; (2) Four Seas; (3) Eight Extra Channels; (4) Group Luo points; (5) 12 Organs and Channels; (6) Solid and Hollow Organs; (7) Channels and Collaterals.

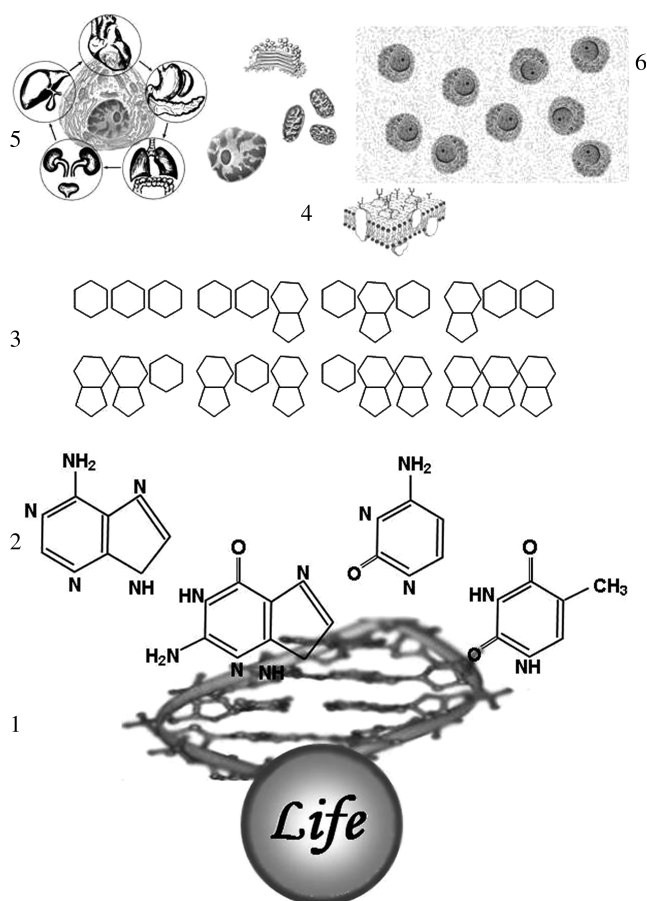


FIG. 5. There is molecular and cellular scheme of the human body: (1) A double helix of DNA molecules; (2) 4 nucleotides; (3) 8 types of Triplets; (4) cell membranes; (5) subcellular structures; (6) cells and intercellular space.

Analyzing theories used in TCM, we believe that they can be easily represented as a simple mathematical model, showing the general laws of the relationship between physiological and pathological process in the human organism.^{1,2}

Therefore, instead of an incalculable quantity of cells—and no easily studied mechanisms of interaction between them—ancient Chinese physicians designed a relatively simplified model of the human body. This model consisted of the limited number of Elements (acupoints, channels, organs, seas), which can have *Excess* or *Deficiency* conditions (Figure 4).

The analogous scheme of the living body based on molecular and cellular structures is presented in Figure 5. If we compare both schemes in Figures 4 and 5, we find that 1 system is similar to another.

DISCUSSION

We have herein raised many, but not all, of the complex issues regarding TCM; we have attempted to offer questions and suggest matters that may perhaps be outside the norm

for modern scientific thinking. Some ideas may appear dubious and may not persuade the skeptic mind. Nevertheless, we believe that as a whole, the majority of terms and theories of TCM can be explained in modern suppositions. Thus, we can study and understand TCM, and ancient knowledge can be useful for both scientific study and daily practice.

CONCLUSIONS

Our hope is that TCM may become vital and acceptable in the Western world, and that Western physicians may recognize modern scientific ideas perhaps in ancient theories. We trust that differences in the terms applied for descriptions of similar ideas in both modern medicine and TCM will not prevent integration of TCM in the modern health care system.

DISCLOSURE STATEMENT

No competing financial interests exist.

PREVIOUS PRESENTATION

The main ideas of this article were presented during the American Academy of Medical Acupuncture (AAMA) 20th Annual Symposium, April 2008, in Washington, DC. They are also included in the manual *Classic and Modern Aspects of Traditional Chinese Medicine*, prepared by Mikhail Teppone, MD, and provided during training courses on acupuncture. Some ideas from this article were presented at a Congress in Russia in 2004.¹

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Address correspondence to:
 Mikhail Teppone, MD, DAc
 AcuTech International Inc
 1057 Steeles Avenue West
 PO Box 81538
 Toronto, ON, M2R 3X1
 Canada

E-mail: mikhail.teppone@gmail.com